

1. Determine the relative importance of nitrogen vs. phosphorus as phytoplankton growth-limiting nutrients in the NRE (Neuse River Estuary).
2. Define and evaluate the environmental conditions required for potential "nuisance" (blue-green algal or dinoflagellate) blooms to become established and proliferate in the NRE.
3. Determine if hypolimnetic hypoxia or anoxia are associated with maximum periods of phytoplankton production in the NRE.
4. Utilizing information obtained from objectives 1-3, provide water quality and fisheries management with a sound and rational set of nutrient input control recommendations.

#### Methods

The following suite of physical, chemical, and biotic field and laboratory measurements were routinely conducted at 1-1.5 month intervals at stations 1, 5, and 6 (Fig. 1), located near the mouth of the NRE. Station 1 is at navigational marker 1 at the confluence of the South River and the NRE. Station 5 is approximately 1 km N-NE of navigational marker 1. Station 6 is across the NRE, approximately 6 km N-NE, at navigational marker 6, southwest of the confluence of Broad Creek and the NRE. These stations form a transect from a segment of the estuary where freshwater input from the South River can have a large influence (station 1) to a segment more characteristic of the vast mesohaline component of this estuary (station 6).